PART I - ADMINISTRATIVE

Section 1. General administrative information

Title of project	
Phalon Lake Wild Rainbow Trap Improvements and O&M	
BPA project number	**20097**
Contract renewal date (mm/yyyy)	
Multiple actions? (indicate Yes or No)	
Business name of agency, institution or organization requesting funding	
Washington Department of Fish and Wildlife	
Business acronym (if appropriate)	**WDFW**
Proposal contact person or principal investigator:	
Name	**Curt Vail**
Mailing address	**1073 Starvation Lk. Rd.**
City, ST Zip	**Colville, WA 99114**
Phone	**(509) 684-5742**
Fax	**(509) 684-7366**
Email address	**cvail@plix.com**
NPPC Program Measure Number(s) which this project addresses	
10.8B.26	
FWS/NMFS Biological Opinion Number(s) which this project addresses	
None	
Other planning document references	
Columbia Basin Fish and Wildlife Authority, Multi-Year Implementation Plan, 1996. Upper Columbia Blocked Area Management Plan. WDFW Region 1 District 1 Management Plan.	
Short description	
Construct a permanent trapping and spawning facility and produce 500,000+ wild rainbow annually	
Target species	
Indigenous redband rainbow trout	

Section 2. Sorting and evaluation

Subbasin
Upper Columbia

Evaluation Process Sort

CBFWA caucus		CBFWA eval. process		ISRP project type	
X one or more caucus		If your project fits either of these processes, X one or both		X one or more categories	
	Anadromous fish	x	Multi-year (milestone-based evaluation)		Watershed councils/model watersheds
x	Resident Fish		Watershed project eval.		Information dissemination
	Wildlife			x	Operation & maintenance
				x	New construction
					Research & monitoring
					Implementation & mgmt
					Wildlife habitat acquisitions

Section 3. Relationships to other Bonneville projects

Umbrella / sub-proposal relationships. List umbrella project first.

Project #	Project title/description

Other dependent or critically-related projects

Project #	Project title/description	Nature of relationship
9104600	Spokane Tribal Hatchery O&M	Resident fish production
9104700	Sherman Cr. Hatchery O&M	Resident fish production
9404300	Lake Roosevelt Monitoring/Data Collection	Resident fish evaluation
9500900	Lake Roosevelt rainbow trout net pens	Resident fish production
9500100	Kalispel resident fish project	Native species and habitat status evaluation
9001800	Evaluate habitat and passage improvements of tributaries to Lake Roosevelt	Native species habitat evaluation
9700400	Resident fish stock status above Chief Joseph and Grand Coulee dams	Information exchange/Blocked area coordination

Section 4. Objectives, tasks and schedules

Past accomplishments

Year	Accomplishment	Met biological objectives?
1996	Produced 26,000 redband fisngerlings for Kettle River Project.	Yes
1997	Produced 26,000 redband fingerlings for Kettle River Project.	Yes
1998	Produced 26,000 redband fisngerlings for Kettle River Project.	Yes

Objectives and tasks

Obj 1,2,3	Objective	Task a,b,c	Task
1	Produce 500,000+ wild stock redband rainbow for resident fish management program in the Upper Columbia Subbasin.	a. b. c.	Completion of NEPA Complete planning and feasibility, engineering and design, and other permits including Washington State Hydraulics Permit, WDOE water discharge permit, Shorelines, etc. Construct a permanent trapping and spawning facility at Phalon Lk. to include providing electrical power to the site, provide a secure permanent trap and holding facility with ladder, and a pumped water complex to provide adequate attraction water and holding water.
2	Provide wild stock fish for tributaries in need of supplementation due to weak populations and as a result of habitat improvements. Provide wild stock fish for use in the Lake Roosevelt fishery.	a. b. c.	Procure 500,000+ wild redband rainbow eggs annually for waters within the Upper Columbia Subbasin Rear 500,000+ wild rainbow fingerlings annually. This production is intended to replace existing production, not additional production Collect wild replacement broodstock annually or as needed to maintain egg recruitment. This will be accomplished by taking wild fish from tributaries known to have 100% redband genetic characteristics.

Objective schedules and costs

Obj #	Start date mm/yyyy	End date mm/yyyy	Measureable biological objective(s)	Milestone	FY2000 Cost %
1	10/1999 10/2000	9/2000 9/2001		Completion of planning & feasibility, eng. & design, NEPA, and other state permits. Construct the trapping facility	25,000 16.66% 100,000 66.66%
2	4/2002 6/2002	6/2002 6/2003	First egg take of at least 200,000 Rear 200,000+ fingerlings	200,000+ eggs 200,000fingerling @ ≥50/#	5,000 3.34% 20,000 13.34%
				Total	150,000 100%

Schedule constraints
Installation of power to the site will be at the discretion of WWP. Engineering and design completion will determine start time of actual construction.
Completion date
06/2003

Section 5. Budget

FY99 project budget (BPA obligated):	$

FY2000 budget by line item

Item	Note	% of total	FY2000 ($)
Personnel			
Fringe benefits			
Supplies, materials, non-expendable property			
Operations & maintenance			
Capital acquisitions or			

improvements (e.g. land, buildings, major equip.)			
NEPA costs		20%	5,000
Construction-related support	Engineering and design	80%	20,000
PIT tags	# of tags:		
Travel			
Indirect costs			
Subcontractor			
Other			
TOTAL BPA REQUESTED BUDGET			25,000

Cost sharing

Organization	Item or service provided	% total project cost (incl. BPA)	Amount ($)
Total project cost (including BPA portion)			

Outyear costs

	FY2001	FY02	FY03	FY04
Total budget	100,000	25,000	26,000	27,000

Section 6. References

Watershed?	Reference
no	Anders, P.J. 1998. Conservation Aquaculture and Endangered Species. Can Objective Science Prevail over Risk Anxiety?. Fisheries 23(11): 28-31.
	Lacy, R.C. 1987. Loss of Genetic Diversity from managed populations: Interacting effects of drift, mutation, immigration, selection, and population subdivision. Consv. Biol. 1:143-158.

PART II - NARRATIVE

Section 7. Abstract

Beginning in the mid-1980s hatchery stock rainbow trout were supplied to the then growing Roosevelt Lake net pen project. Returns to the creel in the fishery were acceptable as a result. Subsequently reservoir operations were altered and serious entrainment of most resident fish species began occurring at Grand Coulee dam. This entrainment resulted in the loss of significant numbers of resident fish from the reservoir. In 1996, as a result of hydroacoustic monitoring of all three turbines at Grand Coulee by the Colville Confederated Tribe, an estimated 816,236 fish were entrained based on monitoring at 58% of the turbine intakes.

The objective of this proposal is to replace hatchery rainbow trout released into upper Columbia subbasin waters with an indigenous stock. The stock to be used is resident to tributaries of the upper Columbia. It is riverine in nature and does not migrate downstream under increased flow conditions that occur annually above Grand Coulee dam. This approach is intended to maximize the retention of trout in tributaries and FDR Lake.

The specific need of this proposal under Section 10.8B.26 is to plan, engineer, construct, and operate and maintain improvements to the Departments' Phalon Lake wild rainbow trout trapping facility and rear 500,000+ wild rainbow trout annually. These improvements will allow the continuation and expansion of the Kettle River wild rainbow stocking program into other upper Columbia River Basin waters.

Section 8. Project description

a. Technical and/or scientific background

A wild broodstock of indigenous redband rainbow trout was established at Phalon Lake in Stevens County, Washington in 1991. Offspring of these fish are being used to restore the native populations in the Kettle River. After three years of yearling fish releases the rainbow population there is growing, with one and two year carryover fish being identified there in 1998. Hook- and- line sampling in July of 1998, produced a CPUE of 5.5. Forty-one percent of the sample was hatchery produced wild fish. Twenty-two percent of the hatchery produced wild fish were carry overs from previous year releases.

Rainbow trout from the Spokane Hatchery stock of fish have been used to supplement and enhance the trout fishery in waters of the Upper Columbia Subbasin via Lake Roosevelt net pens since the mid 1980s. This stock of fish, while having served Washington States' lake fishery management program well for over fifty years, has had limited success when used in lotic environments where they are expected to remain as residents. Changes in the operation of Grand Coulee Dam due to ESA issues relative to Snake and Columbia River anadromous species in recent years have created an environment that is not conducive to retention of this resident stock in the reservoir. Petition to list the native redband rainbow under ESA has caused concern over the use of

non-indigenous trout stocks because of probable genetic adulteration of native populations.

b. Rationale and significance to Regional Programs

Direct relation of this proposal to goals of the 1995 Fish and Wildlife Program (FWP) lies in the replacement of a non-indigenous hatchery stock now being used in BPA funded net pen projects, with wild native fish from the subbasin. This also addresses likely future ESA concerns relative to redband rainbow populations within the subbasin.

Use of an indigenous stock of fish is the most positive means of assuring retention of fish in tributaries and the reservoir. Minimizing risk to genetic pools of resident native trout species is a paramount objective within this proposal (Anders, 1998. Lacy, R.C., 1987). The stock to be used is taken from the wild riverine environment of local tributaries, reared in a wild environment (Phalon L.) and offspring returned to the wild as yearlings. Offspring released to the wild have been observed to remain as resident fish as a result of an ongoing unfunded project in the Kettle R. This process is expected to build a population that does not migrate out of the reservoir and over time will increase the numbers of fish for tributary spawning and the trout fishery. In 1997, approximately 97% of tags from net pen trout have been recovered downstream from Grand Coulee dam by the Lake Roosevelt Monitoring Project (Tom Cichosz, STOI. 1998 Personal Communication). This results in lost recreational opportunity and a loss of the resources ($) dedicated to the production of net pen fish. The fishery enhancement activity that this project addresses is out-of-kind in that it is a resident species substitution for anadromous losses.

c. Relationships to other projects

Relevant projects currently in progress in the Columbia Basin include the Spokane Tribal Hatchery, the Sherman Cr. Hatchery, the Lake Roosevelt Monitoring/Data Collection Project, and the Lake Roosevelt Net pen Project, The Kalispel resident fish project, evaluation of habitat and fish passage improvements of tributaries to Lake Roosevelt, and the resident fish stock status above Chief Joseph and Grand Coulee dams.

Both hatchery projects are an integral part of the Phalon proposal in that they will be the recipients of some of the production from Phalon Lk. for interim incubation and rearing. The Spokane Tribal and Colville hatcheries will incubate the eggs to hatching and rear the fry to a size appropriate for release and net pen rearing. The Sherman Creek and Colville Hatcheries will be involved in subsequent rearing as will the net pen project. Fish released into subbasin waters will be tagged using Floy tags or other marking techniques such as sonic or radio tags as deemed appropriate to identify these fish in the fishery through the ongoing creel census, at fish passage facilities and at down river sites such as the mouth of the Columbia R. where Lake Roosevelt tags have previously been recovered. The Lake Roosevelt Monitoring project will collect data on the fish as it does now via marking/tagging to determine the level of success of the wild stock fish. Further

identification of fish migrating out of Lake Roosevelt may be done at mid-Columbia fish passage facilities. The Kalispel resident fish project, the Colville Tribes' evaluation of habitat and passage improvements, and the resident fish stock status project will provide the data required to identify locations in tributaries for supplementation.

d. Project history (for ongoing projects)

None

e. Proposal objectives

Specific objectives of this proposal include construction of a permanent trapping and spawning facility at Phalon L. for the purpose of taking 500,000+ native redband rainbow trout eggs annually. Fingerlings from these eggs will be used in ongoing net pen projects and future stocking into other Upper Columbia Subbasin waters. Survival rate for these fish can be expected to surpass the current stock survival. Minimizing a net loss of fish due to entrainment at Grand Coulee will be an immediate benefit. Producing a more genetically fit product will add to this improvement.

The first and most important step toward realizing the biological goal of this project will be the trap/spawning facility. The primary product of this facility will be the production of a conservation aquaculture direction for the management of the resident trout resource, while enhancing the recreational fishery opportunity in the upper Columbia Subbasin.

f. Methods

Tasks to be accomplished include installation of electrical power to the trap site, engineering and design, and permit acquisition for the trap facility, and construction of the physical structure. Upon completion of the facility trout eggs will be taken each spring for conversion to fingerlings to be reared at existing hatcheries and net pen sites on Lake Roosevelt and subsequent release into subbasin waters where wild supplementation is deemed appropriate. In addition, these fish will be available as a replacement stock for the Lake Roosevelt fishery.

The broodstock is totally wild. New individuals are introduced annually, no offspring from the broodstock are reintroduced to the gene pool.

A wild redband rainbow broodstock currently exists at the proposed facility site. It is small in number due to the limited scope of current use and the labor-intensive nature of the current trapping arrangement. The current trap consists of a floating Oneida Lake trap. This arrangement causes loss of late season eggs due to warming water temperatures in the epilimnion. An innovative feature of the proposed trap is to pump water from the metalimnion where temperatures remain in the low 50F range throughout the spring and summer.

g. Facilities and equipment

Major equipment required for the project includes a concrete trap and holding space either constructed on-site or pre-fabricated. A 15 hp pump sufficient to supply water for holding fish and for providing attraction water. Approximately 1.25 miles of underground electrical service.

h. Budget

The total budget request of $150,000, includes $25,000 for engineering and design, site preparation, and permits (16.66%). The remaining 125,000(83.4%) will be required for about 1.25 miles of power line installation, purchase of pumps for supplying lake water to the trap and ladder, and construction and placement of the trap structure. The structure itself may be pre-fabricated or constructed on-site, depending which costs less. Quality of the structure will not be determined by cost.

Section 9. Key personnel

Principal investigator
Curt Vail, District I fishery biologist, Washington Department of Fish and Wildlife employed full time.

Resume
Name: Curt Vail
Degree: BS in Biology at Eastern Washington University 1973.Two years of graduate study at EWU.
Current employer: Washington Department of Fish and Wildlife (23 years).
Current responsibilities: District I fishery manager (NE Wahington).
Recent previous employment: WDFW
Expertise: Fifteen years experience working with a wild cutthroat broodstock and eight years with a wild rainbow broodstock and associated trapping facilities. This experience includes managing populations to ensure program egg needs are met, facility maintenance and modifications, and actual spawning operations that have produced up to 700,000 eggs annually. The relevant job completion pertinent to this proposal is the establishment of the wild rainbow broodstock that has provided fish for the Kettle River wild trout supplementation project which has resulted in a significant increase in that population.

Section 10. Information/technology transfer

Information obtained from this project will be incorporated into a Department facility knowledge base and post-production evaluations reported by the Lake Roosevelt Monitoring/Data Collection Project by means of the annual reporting process to BPA

Congratulations!